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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/751,312	01/02/2004	Josehp J. Schottler	P06708US0-6025	2007
34082	7590	08/01/2006	EXAMINER	
ZARLEY LAW FIRM P.L.C. CAPITAL SQUARE 400 LOCUST, SUITE 200 DES MOINES, IA 50309-2350			CHANG, SUNRAY	
			ART UNIT	PAPER NUMBER
			2121	

DATE MAILED: 08/01/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/751,312

Applicant(s)

SCHOTTLER ET AL.

Examiner

Sunray Chang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 30 June 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

**DETAILED ACTION**

1. This office action is in responsive to the paper filed on June 30<sup>th</sup>, 2006.

Claims 1 – 9 are presented for examination.

Claims 1 – 9 are rejected.

**Claim Rejections - 35 USC § 103**

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
  2. Ascertaining the differences between the prior art and the claims at issue.
  3. Resolving the level of ordinary skill in the pertinent art.
  4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
2. **Claims 1 – 4 and 7 – 9 are rejected** under 35 U.S.C. 103(a) as being unpatentable over Joseph F. McCormick (U.S. Patent No. 5,012,722, and referred to as **McCormick** hereinafter), and in view of Takano et al. (U.S. Patent No. 5,938,947, and referred to as **Takano** hereinafter).  
  
(**McCormick** as set forth above generally discloses the basic inventions.)

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**Regarding independent claim 1, 8 and 9, McCormick teaches,**

- A method of driving the coil of an electrohydraulic valve [Abstract, Fig. 3] with a PWM drive [Fig. 3], [see further Col. 5, Lines 14 – 27 & Col. 4, Lines 49 – 64] comprising:
- Transmitting a feedback signal to a digitizing device that is electrically connected to the electrohydraulic valve; [Col. 7, Lines 12 – 39, Fig. 8 applying the selected signal to ADC via analog line]
- Sampling the feedback signal within the digitizing device to create a plurality of signal samples; [Col. 7, Lines 58 – 61]
- Transmitting the plurality of samples to an accumulator; [loop controller receives control information indicating a desired operation of the hydraulic valve through control input, and feedback information indicating the state of various elements in the servo loop, Col. 5, Lines 16 – 20]
- Averaging the plurality of samples within the accumulator to create an average value; [operate in a desired manner, Fig.2a – 2i, Col. 4, Lines 25 – 48, Col. 5, Lines 14 – 27] and
- Transmitting the average value to a closed loop control algorithm that generates a pulse width signal to drive the coil of the electrohydraulic valve. [formula relationships or look up data tables, Col. 7, Lines 47 – 61]

**McCormick** does not point out clearly the “operate in a desired manner” is using “averaging, calculating the samples”

**Takano** teaches “averaging, calculating the samples” [Takano, Col. 6, Line 22 – Col. 8, Line 38] for the purpose of detecting a reduction in the accurately with which the welding

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current is detected, ..., controlling the welding current with a predetermined degree of accuracy even when a reduction is detected. [Col. 2, Lines 57 – 63]

It would have been obvious to a person of ordinary skill in the art at the time of applicant's invention to modify the teaching of **McCormick** to include the teach of **Takano**, "averaging, calculating the samples", for the purpose of detecting a reduction in the accurately with which the welding current is detected, ..., controlling the welding current with a predetermined degree of accuracy even when a reduction is detected. [Col. 2, Lines 57 – 63]

**Regarding dependent claims 2 – 4,**

- The digitizing device is an A/D converter, a DSP or a micro controller. [microprocessor & ADC, Col. 7, Lines 12 – 39 & 47 – 61, Fig. 8]

**Regarding dependent claims 7,**

- The accumulatoe resets when the algorithm sends the pulse width signal to the coil of the electrohydraulic valve. [can be accordingly adjusted approximately once every 1 ms, Col. 7, Lines 58 – 60]

3. **Claims 5 and 6 are rejected** under 35 U.S.C. 103(a) as being unpatentable over **McCormick**, and in view of Gary Bergstrom (U.S. Patent No. 6,249,418, and referred to as **Bergstrom** hereinafter).

(**McCormick** as set forth above generally discloses the basic inventions.)

**Regarding dependent claims 5 and 6,**

**McCormick** teaches algorithms [formula relationships or look up data tables, Col. 7, Lines 47 – 61].

**McCormick** does not teach PID or PI.

**Bergstrom** teaches PID [standard closed loop controller design methods ... PID, Col. 9, Lines 63 – 65], for the purpose of generating the required force. [Col. 9, Lines 66 – 67]

It would have been obvious to a person of ordinary skill in the art at the time of applicant's invention to modify the teaching of **McCormick** to include the teach of **Bergstrom**, "PID", for the purpose of generating the required force. [Col. 9, Lines 66 – 67]

**Response to Amendment**

**Claim Rejections - 35 USC § 103**

4. Applicants' argument regarding **Takano** reference, providing "a method of controlling a welding current highly accurately while making it possible to detect a reduction in the accuracy with which the welding current is detected", is not in the Applicant's field of endeavor.

Basically, current invention can be separate to two different parts:

first part, "a method of driving an electrohydraulic valve with a **PWM** drive"  
which is within the same field with **McCormick** reference;

second part, "processing a plurality of signal samples by averaging the plurality of samples to create an average value" which, basically, is related with "data processing",  
can be used not only in some special field, but any field with "data processing" abilities.

For example, **Takano** reference teaches a feedback control loop, a **PWM** control cycle and averaging measured value to get an average value. This limitation, “averaging measured value to get an average value”, is a mathematic method, can be used in everywhere if necessary.

Further references have been cited by the examiner to show the limitation, “averaging the plurality of samples to create an average value”, can be found in a plurality of fields: Suzumi et al. (U.S. Patent No. 6,859,631), Kimura et al. (U.S. Patent No. 6,801,382), Poletto, Vanni (U.S. Patent No. 6,657,575), Nakazawa, Yosuke (U.S. Patent No. 6,580,247), Masaki et al. (U.S. Patent No. 5,414,339), Shorkey, Michael J. (U.S. Patent No. 5,381,336) and Singleton et al. (U.S. Patent No. 5,341,298). This limitation, “averaging, calculating the samples”, is well known for one with ordinary skill in the art to process and to average sampled data.

### **Conclusion**

5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

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however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sunray Chang whose telephone number is (571) 272-3682. The examiner can normally be reached on M-F 7:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Anthony Knight can be reached on (571) 272-3687. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-746-3506.

Anthony Knight  
Supervisory Primary Examiner  
Group Art Unit 2121  
Technology Center 2100  
U.S. Patent and Trademark Office

*Ramesh Patel*  
RAMESH PATEL  
PRIMARY EXAMINER 7/28/26  
*For Anthony Knight*

July 27, 2006